

A New *Tachycarabus* (Coleoptera, Carabidae) from the  
Southernmost Part of the Min Shan Mountains in  
Northern Sichuan, Southwest China

Yûki IMURA

Shinohara-chô 1249–8, Kûhoku-ku, Yokohama, 222–0026 Japan

and

Jaroslav KALÁB

Jinačovice 119, 66 434 Kuřim, Czech Republic

**Abstract** A new carabid beetle of the genus *Tachycarabus* is described from the southernmost part of the Min Shan Mountains in northern Sichuan, Southwest China, under the name *C. pepek*.

In the summer of 2005, a long series of carabid specimens belonging to the *Rhigocarabus* complex was found from the two localities at the southernmost part of the Min Shan Mountains stretching from north to south along the eastern bank of the Min Jiang River. After a careful comparative study, we have come to the conclusion that the species in question must be new to science. In the present paper, we are going to describe it as a new species belonging to the genus *Tachycarabus* (sensu IMURA, 2002) in the subtribe Carabina. In case the subtribe Carabina is regarded as equivalent to the genus *Carabus* (s. lat.) as is adopted by most European authors, it will be placed in the subgenus *Rhigocarabus* of the grand genus *Carabus*. The abbreviations used herein are the same as those explained in previous papers of the first author (cf. IMURA, 1990, p. 139; 2002, p. 130).

Before going into description, the first author wishes to express his sincere gratitude to Messrs. Igor BELOUSOV (St. Petersburg, Russia) and Ilya KABAK (Almaty, Kazakhstan) for their kind cooperation. Thanks are also due to Dr. Shun-Ichi UÉNO (National Science Museum, Tokyo) for reviewing the manuscript of this paper.

*Tachycarabus pepek* IMURA et KALÁB, sp. nov.

(Figs. 1–3)

Length (including mandibles): ♂, 16.5–19.0 (arithmetic mean 17.7) mm; ♀,

17.0–19.5 (arithmetic mean 18.5) mm (in the population from Zhenjiangguan); ♂, 14.6–17.3 (arithmetic mean 16.0) mm; ♀, 15.5–18.2 (arithmetic mean 17.1) mm (in the population from Jiaochangba).

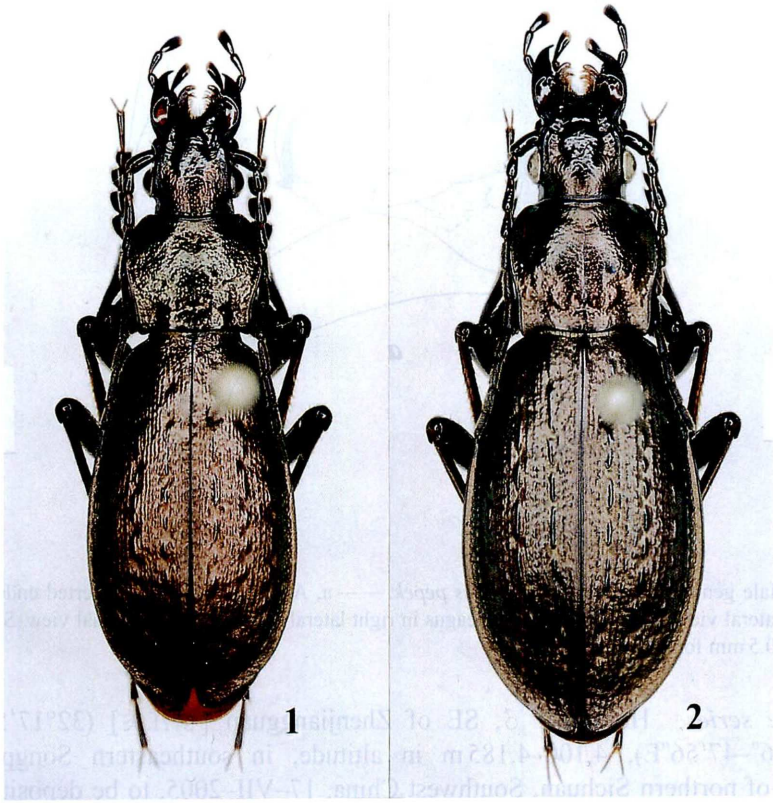
Upper surface of body not strongly polished, with the coloration dark reddish coppery to dark brown often with a faint greenish tinge, or nearly entirely blackish or greenish in some individuals; venter and appendages brownish black, though tibiae and basal parts of mandibles, palpi and antennae are a little more strongly reddish.

Head not hypertrophic in both sexes, with the eyes almost normal in size and degree of protrusion; frons weakly convex above, often roughly rugulose and sometimes scattered with small punctures; frontal furrows not so wide and not deeply concave, and irregularly rugulose on the surface; vertex to neck irregularly and roughly wrinkled and often sporadically scattered with vague punctures; retinaculum of right mandible narrower and smaller than that of the left one, with the anterior tooth usually a little shorter than the posterior on both sides; terminal segments of palpi not remarkably dilated in both sexes; penultimate segment of labial palpus bisetose; median tooth of mentum shorter than lateral lobes, slightly protruded ventrad, and triangularly shaped though not sharply pointed at the tip; submentum bisetose; antennae not so long, barely reaching basal third of elytra in male and reaching basal quarter in female; hairless ventral depression, or thiridium, of male antennae recognizable from segment 5 to 9 or 10.

Pronotum rather small, subcordate, much wider than long and widest near the apical quarter to third; apical margin weakly emarginate, front angles obtusely rounded and hardly protruded anteriorly; lateral sides distinctly margined throughout, gently rounded in front and either sinuately or nearly straightly narrowed towards hind angles which are subtriangularly produced posteriorly with blunt tips; disc weakly convex above, with the surface weakly wrinkled and sometimes vaguely punctate in median portion, often becoming rather scabrous in peripheral portion; basal foveae small, not so deeply concave though distinct, and median longitudinal line clearly impressed throughout; one to three marginal setae inserted on either side of pronotum, one or two in median portion and zero or one before hind angle.

Elytra elongated oval, weakly convex above, widest a little or obviously behind the middle, more gradually narrowed towards bases than towards apices, with effaced shoulders; lateral sides gently arcuate throughout though often nearly straight before the widest part in male, with the margins narrowly reflexed above; sculpture tri- or heptaploid heterodyname — primaries the strongest, rather irregularly segmented by shallow, not so large primary foveoles to form rows of narrow costae; secondaries much weaker and narrower than primaries, indicated by longitudinally arranged rows of small granules, partly becoming contiguous to form irregularly interrupted costae; tertiaries also indicated by rows of small granules as in secondaries, often separated into two rows to form quarternaries and sometimes adhesive to adjacent intervals to form reticular pattern; umbilicate series indicated by irregularly and sporadically set rows of fine granules; each elytron with a shallow but rather remarkable depression a





Figs. 1–2. *Tachycarabus pepek* from SE of Zhenjiangguan (4,100–4,185 m) in northern Sichuan. — 1, ♂, holotype, 2, ♀, paratype.

little before apex.

Episterna almost smooth, sides of sternites weakly wrinkled, sternal sulci unrecognized; metacoxa trisetose; basal four segments of male foretarsus dilated with hair pads on ventral surface.

Male genitalia as shown in Fig. 3; aedeagus slender, gently arcuate throughout and weakly bent ventrad apicad in lateral view; apical lobe rather short, about 1.5 times as long as wide, finger-tip like in shape with the apex obtusely rounded in lateral view and subtriangularly shaped in dorsal view; OL unilobed and rather small; ligulum indicated by longitudinally set rows of granules to form a narrow ridge; neither BL nor ML recognized, though basal part of endophallus near aedeagal apex apparently inflated; PRE indicated by a pair of hemispherically protruded hairy inflations; PAR rather strongly and symmetrically protruded dorsad on both sides; PP large, hemispherically inflated and not remarkably pigmented; AL weakly inflated; PL not so large but well recognizable; AGG weakly sclerotized and pigmented, indicated by a pair of small terminal plate weakly projected towards inflexed sides of endophallus.

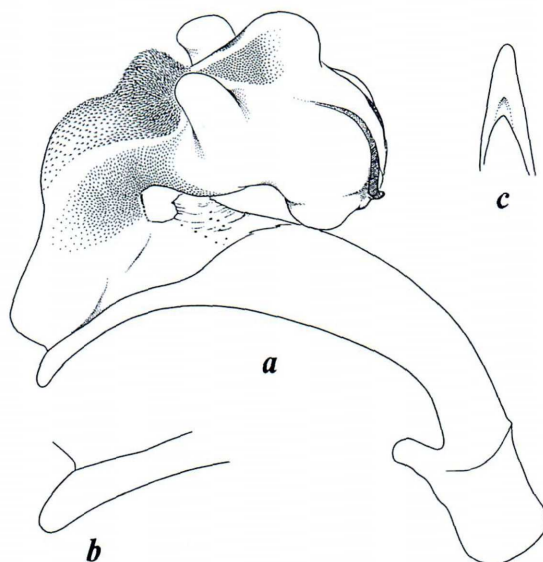


Fig. 3. Male genital organ of *Tachycarabus pepek*. — a, Aedeagus with fully everted endophallus in right lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view. Scale: 1 mm for a; 0.5 mm for b & c.

*Type series.* Holotype: ♂, SE of Zhenjiangguan [镇江关] ( $32^{\circ}17'54''\text{--}57''\text{N}/103^{\circ}47'56''\text{--}47'56''\text{E}$ ), 4,100–4,185 m in altitude, in southeastern Songpan Xian [松潘县], of northern Sichuan, Southwest China, 17–VII–2005, to be deposited in the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 13♂♂, 14♀♀, same data as for the holotype; 10♂♂, 12♀♀, same area ( $32^{\circ}17'57''\text{--}18'17''\text{N}/103^{\circ}47'56''\text{--}48'07''\text{E}$ , 4,185–4,421 m in altitude), 20–VII–2005; 42♂♂, 45♀♀, 8 km ESE of Jiaochangba [较场坝] (=Jiaochang [较场]) ( $32^{\circ}01'\text{N}/103^{\circ}46'\text{E}$ ), 4,300 m in altitude, in northern Mao Xian [茂县], of northern Sichuan, Southwest China, 15–17–VII–2005, separately preserved in the collections of the authors, the Zoological Institute of Academy of Sciences (St. Petersburg) and B. BRĚZINA (Prague).

*Notes.* The present new species was collected from two different sites in the alpine zone over 4,100 m on the same mountain range. The population from Zhenjiangguan is somewhat different from that of Jiaochangba in having larger size on average, relatively large pronotum, longer and slenderer elytra, narrower primary costae, etc. All these are, however, considered to be a mere variation within the same species mainly due to the difference of altitude of each locality, and we hesitate to separate them into two different subspecies.

The new species is characterized by less hypertrophic head, irregularly and roughly rugoso-punctate dorsal surface of the head and pronotum, relatively small pronotum, only weakly convex pronotum and elytra, tri- or heptaploid heterodynamic elytral sculpture with the strongest primary costae, and long and slender appendages,



etc.

It is most closely allied to *T. pusio* SÉMÉNOW (1898, p. 362) described from “Sun-pan” (=Songpan) of northern Sichuan, but is readily discriminated from that species mainly by the following respects: 1) eyes less strongly protruded laterad; 2) pronotum relatively small, with much more uneven discal surface, deeper basal foveae and less strongly projected hind angles; 3) elytra usually a little longer and slenderer, with more effaced shoulders; 4) aedeagus slenderer, less strongly arcuate, with the median portion less strongly inflated right laterad, apical lobe a little longer and slenderer, and less remarkably bent right laterad in dorsal view; endophallus with OL and PRE smaller, PAR larger and more strongly projected dorsad.

From *T. pseudopusio* DEUVE (1996, p. 22) described from “vallée à 10 km au sud-est de Sanggarpar, env. 4200 mètres” of northern Sichuan, *T. pepeki* nov. is distinguished by much slenderer body, less hypertrophic head, less transverse pronotum with shorter hind angles, and shorter apical lobe of aedeagus which is less remarkably bent ventrad in lateral view.

It is necessary to compare the new species with *T. korsakowi* SÉMÉNOW (1898, p. 361) described from “Ta-tz’ao-pin supra angustias Cho-dgi-gou, haud procul ab urbe Lun-ngan-fu, alt. 10. –13.000’ s. m.” Regrettably, however, it is impossible to make a full comparative study between the two species based on both sexes, since SÉMÉNOW’s species has been known so far only from a single female specimen. So far as we have examined the holotype of *T. korsakowi* now preserved in the Zoological Institute of Academy of Sciences (St. Petersburg), the new species seems to be distinguishable from SÉMÉNOW’s race by lighter coloration of appendages, narrower pronotum with more remarkably protruded front angles and less strongly uneven discal surface, shorter and robuster elytra with narrower primary costae and less strongly developed other intervals.

The new species somewhat resembles *T. (?) jintangicus* DEUVE (2001, p. 90) described from “environs de Jintang, 4200 mètres” of Sichuan, but the former is readily discriminated from the latter as follows: 1) appendages longer and slenderer; 2) dorsal surface of head and pronotum less roughly rugoso-punctate; 3) pronotum different in shape, with the lateral sides more roundly arcuate in front, more remarkably sinuate behind, the disc more strongly convex above and the hind angles narrower and more sharply pointed at the apices; 4) elytra a little less strongly convex above, with the lateral sides less roundly arcuate; 5) elytral disc differently sculptured, with the primary costae a little wider and segmented by deeper primary foveoles, the secondaries and **tertiaries indicated by less regularly set rows of granules** and the quarternaries more reduced; 6) apical portion of aedeagus less strongly bent ventrad in lateral view, with the tip not subquadrate but obtusely rounded.

Aedeagal features of the new species resemble those of “*Carabus*” *ladygini* SEMÉNOV (1903, p. 349) described from “jug. Amnen-kor, alt. 13. –14.000’ s. m.”, the mountain range located between the sources of the rivers Huang He and Chang Jiang. However, the former is easily discriminated from the latter in larger size, slenderer pro-

portion with less hypertrophic head, much more uneven dorsal surface, etc. It is most probable that SEMENOV's species belongs, together with *A. roborowskii*, to *Araeocarabus* in the *Rhigocarabus* complex according to the molecular phylogenetical study (IMURA, 2002, p. 11).

*Etymology.* The new specific name comes from that of a colleague of the second author, Mr. Pepek (=Josef) SKOTÁK. *Pepek* is another denomination of *Josef* in Czech language.

## 要 約

井村有希・J. KALÁB：中国四川省北部から発見されたプーシオードウガネオサムシ属の1新種。—— 2005年の夏、中国四川省北部松潘県から茂県にかけての岷江東岸を南北に走る岷山山脈最南端部から、プーシオードウガネオサムシ属に属する未記載種が発見されたので、*Tachycarabus pepek* という名を与え、本論文において記載した。

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